Picking & Storage of Seed

How does Main Roads use & procure seed
Main Roads has a long history of revegetation across our road network and associated areas. Our Environmental Policy states that we are committed to protecting and enhancing the environment, including our heritage and social values in all of our activities, products and services. Revegetation is a necessary part of meeting our environmental objectives and project approval conditions.

Topics to Cover

How Main Roads use Seed
- Where
- Rates

How Main Roads Store Seed

How Main Roads Procure Seed
- Procurement Strategy
- Contract Types
- Specifications

How Main Roads may use Seed in the Future
# Revegetation History

<table>
<thead>
<tr>
<th>Year</th>
<th>Total (ha)</th>
<th>Year</th>
<th>Total (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>213.64</td>
<td>2012</td>
<td>186.28</td>
</tr>
<tr>
<td>2004</td>
<td>110.65</td>
<td>2013</td>
<td>239.20</td>
</tr>
<tr>
<td>2005</td>
<td>79.50</td>
<td>2014</td>
<td>292.90</td>
</tr>
<tr>
<td>2006</td>
<td>259.28</td>
<td>2015</td>
<td>154.20</td>
</tr>
<tr>
<td>2007</td>
<td>207.80</td>
<td>2016</td>
<td>287.00</td>
</tr>
<tr>
<td>2008</td>
<td>306.00</td>
<td>2017</td>
<td>206.00</td>
</tr>
<tr>
<td>2009</td>
<td>494.98</td>
<td>2018</td>
<td>139.00</td>
</tr>
<tr>
<td>2010</td>
<td>138.68</td>
<td>2019</td>
<td>58.00</td>
</tr>
<tr>
<td>2011</td>
<td>179.34</td>
<td>2020</td>
<td>214.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,766.46</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Revegetation and Landscaping refers to the re-establishment of vegetation, which is undertaken as part of road works. This helps to retain and enhance the environmental values of the road reserve. Find out more about individual revegetation and landscaping through this map or by clicking to the "Switch to list view".

Filter by method

- Landscaping
- Revegetation
- Rip and Respread
- Wheatbelt Revegetation Bank

Proposed Clearing
Under Statewide Clearing Permit (CPS 818/15)
How Main Roads use Seed

Revegetation implemented via three main techniques;

• Rehabilitation
  o Rehabilitation works may be limited to reshaping and ripping of the soil surface and spreading available topsoil (*pits and up north*).

• Planting
  o Planting is carried out during winter using seedlings previously grown in a nursery (*south*). Rarely we supply the seed, more often rely on nursery to source the seed.

• Direct Seeding
  o Direct Seeding involves site preparation that’s similar to the rehabilitation technique, then followed by a mix of native seed broadcast over the freshly ripped ground (*state-wide*).
  o Weeds will outcompete the native seed so this technique is perfect for weed free areas like redundant road alignments/side tracks, new batters and disused laydown areas.
Direct Seeding

2009

2017
Seed Rates

• Planting
  o Very limited data on seed usage to produce seedlings.
  o In 2009 when seed was supplied to 3 nurseries for a 77 ha project it worked out at **120 grams** of seed per hectare. This was for an order of 181,500 seedlings over 73 species at 2,300/ha, ended up with a final supply of 156,800 with 59 species at 2,000/ha.

• Direct Seeding
  o Rates in the 1990’s for roadsides were 3 kg/ha and 2 kg/ha for gravel pits when surrounded by state forest.
  o Early 2000’s 3-4 kg/ha were common, has been higher up north especially with grass dominated mixes.
  o Now, especially with landscape influence up to 5 kg/ha is used, 10 kg/ha everlastings.
  o Linear seeding machine back down to less than 2 kg/ha.
# Seed Numbers - Past & Future Projects

<table>
<thead>
<tr>
<th>Project</th>
<th>Year</th>
<th>Seed (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern Gateway</td>
<td>2007-2009</td>
<td>1566.6</td>
</tr>
<tr>
<td>GNH Upgrades</td>
<td>2009-2016</td>
<td>140.6</td>
</tr>
<tr>
<td>Gateway Alliance</td>
<td>2014-2016</td>
<td>301.1</td>
</tr>
<tr>
<td>Coalfields Highway</td>
<td>2016 &amp; 2019</td>
<td>51.0</td>
</tr>
<tr>
<td>GNH Upgrades</td>
<td>2017-2020</td>
<td>218.8</td>
</tr>
<tr>
<td>Northlink Stage 2</td>
<td>2018-2019</td>
<td>754.9</td>
</tr>
<tr>
<td>Wheatbelt Seeding</td>
<td>2021</td>
<td>63.5</td>
</tr>
<tr>
<td>Albany Ring Road</td>
<td>2022-2023</td>
<td>57.1</td>
</tr>
<tr>
<td>Bunbury Outer Ring Road</td>
<td>+2022</td>
<td>+1500.0</td>
</tr>
<tr>
<td>South West Region</td>
<td>2022-2024</td>
<td>400</td>
</tr>
</tbody>
</table>
Storing Seed

- Competing use of space (priorities).
- Historical storage in regions.
- Large projects bring in a sea container.
- Pay seed merchants to store our seed.
- Idea a decade ago to have a “Legacy Seed Bank”.
How Main Roads Procure Seed

Seed Supply
- Very limited to no in house collection.
- Purchase Order – Generally for seed off the shelf.
- Tender – seed merchants may be holding seed or need to secure.
- Day rates – targeted collection.

Paperwork Part
- Procurement Strategy – Contracts - Specifications
## Procurement Strategy

Deciding who will do each of the required elements and how they will be engaged influences the type of contract and associated documentation required.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Supply of Seed &amp; Seedlings</th>
<th>Weed Control</th>
<th>Ripping</th>
<th>Planting &amp; Seeding</th>
<th>Monitoring &amp; Reporting</th>
<th>Maintenance / Infill Planting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>All elements are contracted out separately</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>2</td>
<td>Seed/Seedlings organised by Main Roads (principal supplied). Site elements then combined into one package.</td>
<td>x</td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>3</td>
<td>Supply and Install as one package</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>4</td>
<td>All elements delivered as one package</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
</tbody>
</table>
## Contracts

There are four main contract types; Direct Managed, AS2124, Design & Construct and Alliances.

<table>
<thead>
<tr>
<th>Contract Type</th>
<th>Pro’s</th>
<th>Con’s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Managed</td>
<td>We control each element. Changes to the works can be made easily. Offers best value for money and we become an “informed purchaser” along with having ownership of the works.</td>
<td>Requires a level of in house knowledge of revegetation to administer the works. Time consuming.</td>
</tr>
<tr>
<td>Australian Standard AS2124</td>
<td>Inclusion with the civil work can see efficiencies in earthworks and traffic management. Contractor’s staff manage, Main Roads does not have enough revegetation employees.</td>
<td>Revegetation plans and drawings must be ready before the roadworks are tendered out. Not civil contractors core business - so they simply subcontract the work out.</td>
</tr>
<tr>
<td>Design &amp; Construct</td>
<td>Contractor designs so we don’t need to know every element before works are awarded. Risk transfer to the contractor.</td>
<td>Expensive (risk transferred to the contractor). Potential loss of control over the final product. At arms length until establishment period ends.</td>
</tr>
<tr>
<td>Alliance</td>
<td>Ability to implement new ideas and technology. Main Roads staff and contractors (non owner participant) work together to achieve outcomes. Saying, “Alliances should achieve better than business as usual”.</td>
<td>Can suffer from “Boab Syndrome”. Dominated by landscaping themes.</td>
</tr>
</tbody>
</table>
Specification 304

Main Roads has a defined list of Specifications used to prepare tender contract documentation. Revegetation sits within the 300 Series which also contains other elements like clearing and earthworks - the ‘Revegetation’ Specification is 304.

- **Landscaping & Revegetation**
  - This version of the 304 Specification contains the full suite of clauses. It can be used for larger projects and works with establishment periods and landscaping elements, such as planting beds, reticulation and/or turf.

- **Revegetation**
  - This version of the 304 Specification is a reduced version, with elements relating to landscaping removed. It is used in revegetation works and smaller projects with traditional seeding and planting techniques, it can also be used for standalone revegetation packages.

- **Rehabilitation of Disturbed Areas**
  - This version of the 304 Specification is used for material pit rehabilitation and projects that employ topsoil management for their rehabilitation strategy.
  - It can also be used for projects where future revegetation works will follow under a separate contract and the civil contractor will only be responsible for topsoil and/or mulch management.
**Future Use of Seed**

Where to from here

- **Seed Collecting**
  - Early advice of projects.
  - Possibly more principal supplied or revegetation removed from roadworks contract.

- **Seeding Rates**
  - Potentially have to be lowered if pressure to secure seed increases.

- **The dreaded P word - Provenance**
  - Continuing to require for offsets but loosening for landscaping and roadside revegetation.
  - Open up opportunities for seed orchards.
Wrap up

• Summary
  o We love direct seeding redundant road alignments.
  o Can 4kg/ha be sustainable in the future.
  o Procurement strategy.

• Planning
  o What will be the provenance of future seed.
  o Should we store more seed?

• Implementing
Thankyou

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